

CLAIMS

We claim:

1. A targeting construct comprising:
 - (a) a first polynucleotide sequence homologous to a target gene, wherein the target gene is a sulfotransferase gene;
 - (c) a second polynucleotide sequence homologous to the target gene; and
 - (d) a selectable marker.
2. The targeting construct of claim 1, wherein the targeting construct further comprises a screening marker.
3. A method of producing a targeting construct, the method comprising:
 - (a) obtaining a first polynucleotide sequence homologous to a sulfotransferase gene;
 - (b) obtaining a second polynucleotide sequence homologous to a sulfotransferase gene;
 - (c) providing a vector comprising a selectable marker; and
 - (d) inserting the first and second sequences into the vector, to produce the targeting construct.
4. A method of producing a targeting construct, the method comprising:
 - (a) providing a polynucleotide sequence homologous to a sulfotransferase;
 - (b) generating two different fragments of the polynucleotide sequence;
 - (c) providing a vector having a gene encoding a selectable marker; and
 - (d) inserting the two different fragments into the vector to form the targeting construct.
5. A cell comprising a disruption in a sulfotransferase.
6. The cell of claim 5, wherein the cell is a murine cell.
7. The cell of claim 6, wherein the murine cell is an embryonic stem cell.
8. A non-human transgenic animal comprising a disruption in a sulfotransferase.
9. A cell derived from the non-human transgenic animal of claim 8.
10. A method of producing a transgenic mouse comprising a disruption in a sulfotransferase gene, the method comprising:
 - (a) introducing the targeting construct of claim 1 into a cell;
 - (b) introducing the cell into a blastocyst;

- 5 (c) implanting the resulting blastocyst into a pseudopregnant mouse, wherein said
pseudopregnant mouse gives birth to a chimeric mouse; and
(d) breeding the chimeric mouse to produce the transgenic mouse.
11. A method of identifying an agent that modulates the expression of a sulfotransferase, the
method comprising:
- 10 (a) providing a non-human transgenic animal comprising a disruption in a
sulfotransferase gene;
(b) administering an agent to the non-human transgenic animal; and
(c) determining whether the expression of sulfotransferase in the non-human transgenic
animal is modulated.
- 15 12. A method of identifying an agent that modulates the function of a sulfotransferase, the
method comprising:
- (a) providing a non-human transgenic animal comprising a disruption in a
sulfotransferase gene;
(b) administering an agent to the non-human transgenic animal; and
20 (c) determining whether the function of the disrupted sulfotransferase gene in the non-
human transgenic animal is modulated.
13. A method of identifying an agent that modulates the expression of sulfotransferase, the
method comprising:
- 25 (a) providing a cell comprising a disruption in a sulfotransferase gene;
(b) contacting the cell with an agent; and
(c) determining whether expression of the sulfotransferase is modulated.
14. A method of identifying an agent that modulates the function of a sulfotransferase gene, the
method comprising:
- 30 (a) providing a cell comprising a disruption in a sulfotransferase gene;
(b) contacting the cell with an agent; and
(c) determining whether the function of the sulfotransferase gene is modulated.
15. The method of claim 13 or claim 14, wherein the cell is derived from the non-human
transgenic animal of claim 8.
16. An agent identified by the method of claim 11, claim 12, claim 13, or claim 14.

- 5 17. A transgenic mouse comprising a disruption in a sulfotransferase gene, wherein the transgenic mouse exhibits at least one of the following behaviors: aggressive, hyperactive, increased activity or decreased anxiety behavior.
18. The transgenic mouse of claim 17, wherein the transgenic mouse is heterozygous for a disruption in a sulfotransferase gene.
- 10 19. The transgenic mouse of claim 17, wherein the transgenic mouse is homozygous for a disruption in a sulfotransferase gene.
20. A method of producing a transgenic mouse comprising a disruption in a sulfotransferase gene, wherein the transgenic mouse exhibits at least one of the following behaviors: aggressive, hyperactive, increased activity or decreased anxiety behavior, the method comprising:
 - 15 (a) introducing a sulfotransferase gene targeting construct into a cell;
 - (b) introducing the cell into a blastocyst;
 - (c) implanting the resulting blastocyst into a pseudopregnant mouse, wherein said pseudopregnant mouse gives birth to a chimeric mouse; and
 - (d) breeding the chimeric mouse to produce the transgenic mouse comprising a disruption in a sulfotransferase gene.
- 20 21. A cell derived from the transgenic mouse of claim 17 or claim 20, wherein the cell comprises a disruption in a sulfotransferase gene.
22. A method of identifying an agent that ameliorates a behavior associated with a disruption in a sulfotransferase gene, the method comprising:
 - 25 (a) administering an agent to a transgenic mouse comprising a disruption in a sulfotransferase gene; and
 - (b) determining whether the agent ameliorates at least one of the following behaviors: aggressive, hyperactive, increased activity or decreased anxiety behavior of the transgenic mouse.
- 30 23. A method of identifying an agent which modulates sulfotransferase expression, the method comprising:
 - (a) administering an agent to the transgenic mouse comprising a disruption in a sulfotransferase gene; and
 - (b) determining whether the agent modulates sulfotransferase expression in the
- 35 24. The method of claim 23, wherein the agent has an effect on at least one of the following

5 behaviors: aggressive, hyperactive, increased activity or decreased anxiety behavior of the transgenic mouse.

24. A method of identifying an agent which modulates a behavior associated with a disruption in a sulfotransferase gene, the method comprising:

- 10 (a) administering an agent to a transgenic mouse comprising a disruption in a sulfotransferase gene; and
- (b) determining whether the agent modulates at least one of the following behaviors: aggressive, hyperactive, increased activity or decreased anxiety behavior of the transgenic mouse .

25. An agent identified by the method of claim 22, claim 23 or claim 24.

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091600-03191
2005-05-20